REMARKS

FORMAL MATTERS:

Claims 34, 40, 45-66 and 69-74 are pending in this application.

Claims 67 and 68 are canceled without prejudice.

Claims 45, 63-66, 69 and 70 are amended herein. Claim 45 is amended to correct a typographical error. Claims 63-66 are amended to correct antecedent basis inconsistencies as requested by the Examiner. Claims 65 and 66 are also amended to change the limitation "human" to "non-human". This amendment corrects a typographical error that occurred in the amendment filed by Applicants on October 18, 2005 (i.e., the "non-" limitation previously in claims 65 and 66 was unintentionally removed). Claims 69 and 70 have been amended to include the limitation "in a mammal" after the phrase "disease or disorder", the support for which can be found throughout the specification and claims (see, e.g., the background of invention section).

Claims 71-74 have been previously withdrawn from consideration.

Claims 34, 40, 45-66 and 69-70 are currently under examination.

As no new matter is added, entry of these amendments by the Examiner is respectfully requested.

OBJECTIONS TO THE CLAIMS

Claim 64 is objected to for having a space between the last word and the concluding period.

In response, the Applicants have amended Claim 64 to remove this space (which occurs after the deleted phrase "tissue source"). Withdrawal of this objection is respectfully requested.

REJECTIONS UNDER §101, UTILITY

Claims 34, 40, and 45-70 have been rejected under 25 U.S.C. §101 as lacking patentable utility. The Applicants respectfully traverse this rejection.

The Utility Examination Guidelines state that Office personnel are to adhere to the following procedures when applying a rejection under 35 U.S.C. §101. Any rejection based on lack of utility should include a detailed explanation as to why the claimed invention has no specific and substantial

credible utility.[1] Whenever possible, the Office should provide documentary evidence.[2] In the absence of documentary evidence, the Office must provide a prima facie showing that establishes that it is more likely than not that a person skilled in the art would not consider credible any specific and substantial utility asserted by the Applicants for the claimed invention. A prima facie showing must contain the following elements: (1) an explanation that clearly sets forth the reasoning used in concluding that the asserted specific and substantial utility is not credible; (2) support for factual findings relied upon in reaching this conclusion; and (3) an evaluation of all relevant evidence of record.[3] A rejection based on lack of utility should not be maintained if an asserted utility for the claimed invention would be considered specific, substantial, and credible by a person of ordinary skill in the art in view of all evidence of record. Utility Examination Guidelines, *Federal Register* (Jan. 5, 2001) Vol. 66(4):1092-1099, emphasis added.

Applicants respectfully assert that the totality of the evidence demonstrates a specific, substantial and credible utility and that the Office has not provided evidence that it is more likely than not that Applicants' statements of utility are false.

It is well established that "a specification which contains a disclosure of utility which corresponds in scope to the subject matter sought to be patented must be taken as sufficient to satisfy the utility requirement of §101 for the entire claimed subject matter unless there is a reason for the skilled in the art to question the objective truth of the statement of utility or its scope." *In re Langer* 183 USPQ 288, 297 (CCPA 1974) (emphasis in original).

In making this rejection, the Examiner states the following (see paragraph bridging page 5 to 6):

> Each method of screening requires an orphan GPCR that has been associated with a disease or disorder. However, each claimed method lacks specific and substantial utility because the orphan GPCRs to be used are associated with an *unspecified* disease or disorder... Furthermore, a substantial utility must be "a utility that defines a "real world" use... In the instant case, the instant specification, as filed, does not provide any examples of orphan GPCRs that were associated with a disease or disorder. The association of a known orphan GPCR with a disease or disorder constitutes "carrying out further research to identify or confirm a "real world" context of use".

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[1]Fed. Reg. Vol. 66 at page 1098, Section II-B, paragraph 3.
[2]Fed. Reg. Vol. 66 at page 1098, Section II-B, paragraph 3.
[3]Fed. Reg. Vol. 66 at page 1098, Section II-B, paragraph 3.

As discussed in the specification, at the time of the invention, the traditional study of receptors proceeded from the *a priori* assumption that the endogenous ligand of a receptor must first be identified before discovery could proceed to find compounds that modulate its activity (see, for example, page 29, lines 13-20 of the instant specification). Thus, at the time of the invention, it was not thought that orphan GPCRs (where, by definition, the ligand is not known) could be screened to find compounds that modulate the orphan receptor. The subject application discloses methods for screening orphan GPCRs by constitutively activating the receptor or by using orphan GPCRs that are endogenously constitutively active (see, for example, page 30, lines 7-10 of the instant specification). The presently claimed invention exploits these constitutively activated orphan GPCRs in methods of screening for candidate compounds that can modulate the activity of the orphan GPCR. As such, the screening methods are not limited to a particular orphan GPCR or to a particular disease or disorder associated with the orphan GPCR.

However, the claims state that the orphan GPCR that is being screened "has been associated with a disease or disorder in a mammal." Therefore, as recited in the claims, one of skill in the art would have in hand an orphan GPCR that has been associated with a disease or disorder as a starting point for using the claimed methods to screen for a compound that modulates the orphan GPCR. As such, Applicants respectfully submit that it is incorrect to conclude that the claimed invention lacks a specific and substantial utility because the claims are not limited to a specific orphan GPCR associated with a specified disease or disorder in a mammal. Rather, one of skill in the art can apply the claimed methods to screen for compounds that modulate any orphan GPCR associated with a specific disease or disorder in a mammal. Therefore, the claimed methods can he applied to any orphan GPCR that meets the requirements in the claims (i.e., it has been associated with a disease or disorder in a mammal).

As noted above, the Examiner asserts that because the instant specification does not provide any examples of orphan GPCRs associated with a disease or disorder, one of skill must carry out additional research to identify a "real world" context of use.

However, the Applicants respectfully submit that this statement by the Examiner does not accurately reflect the disclosure of the specification nor does it reflect what was known in the art at the time of its filing. Specifically, the Applicants submit that orphan GPCRs associated with diseases or disorders in mammals were known at the time of filing the present application and/or disclosed therein.

As one example, the Applicants draw the Examiner's attention to Figure 15 of the present application, which is described in Example 4 (see page 75, lines 4-6). Figure 15 shows that the orphan receptor GPR3 is more highly expressed in neuronal tissue from the temporal lobe of individuals with epilepsy as compared to individuals not suffering from this condition.

As another example, the Applicants draw the Examiner's attention to page 65, lines 14 to 22 of the present application, in which it is noted that a constitutively active orphan GPCR has been associated with Kaposi's sarcoma. Indeed, a ligand has now been identified for this GPCR (thus "de-orphanizing" it). However, *before* the ligand was identified, i.e., when this GPCR was an orphan (and which was prior to the filing of the subject application), this GPCR had been associated with a disease, i.e., Kaposi's sarcoma.

Therefore, the Applicants respectfully submit that, contrary to the assertions by the Examiner, the instant application as filed provides examples of orphan GPCRs that have been associated with a disease.

The Examiner summarizes his position by quoting *In Re Fisher* (76 USPQ2d 1225 (CA FC 2005)), which concludes by stating: "Simply put, to satisfy the 'substantial' utility requirement, an asserted use must show that that claimed invention has a significant and presently available benefit to the public". Based on the discussion above, the Applicants respectfully submit that, in contrast to the Examiner's assertion, they have shown that the claimed invention has a significant and presently available benefit to the public, and therefore have fully satisfied the requirements of 35 U.S.C. §101. As such, withdrawal of this rejection is respectfully requested.

REJECTIONS UNDER §112, ¶1 (ENABLEMENT)

Claims 34, 40 and 45-70 are rejected as not meeting the "how to use" part of the enablement requirement of 35 U.S.C. § 112, first paragraph.

The basis for this rejection is the Examiner's contention that the claims are not supported by a patentable utility.

As such, it is believed that this rejection has been adequately addressed in the discussion in the preceding section of this response.

In view of the discussion in the preceding section of this response, this rejection should be withdrawn.

REJECTIONS UNDER §112, ¶1 (WRITTEN DESCRIPTION)

Claims 34, 40 and 45-70 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

In making this rejection, the Examiner asserts that "[t]he specification provides examples of orphan GPCRs, such as GPR3, GPR6 and GPR12 (pg 76), but does not teach a disease or disorder that is associated with any of these orphan GPCRs." The Examiner goes on to assert that "the specification as originally filed does not describe any examples of endogenous constitutively active orphan GPCRs that have been associated with a disease or disorder."

As detailed above, the Applicants respectfully submit that the instant application as filed provides examples of orphan GPCRs that have been associated with a disease.

As one example, the specification provides data showing that the orphan receptor GPR3 is more highly expressed in neuronal tissue from the temporal lobe of individuals with epilepsy as compared to individuals not suffering from this condition (see Figure 15 and its description in the specification on page 75, lines 5-7).

As another example, the specification describes a constitutively active orphan GPCR that has been associated with Kaposi's sarcoma (see page 65, lines 14 to 22 of the specification). Indeed, a ligand has now been identified for this GPCR (thus "de-orphanizing" it). However, *before* the ligand was identified, i.e., when this GPCR was an orphan (and which was prior to the filing of the subject application), this GPCR had been associated with a disease, i.e., Kaposi's sarcoma. In other words, the fact that this GPCR has been de-orphaned does not in any way negate the fact that when it was an orphan, it had been associated with a disease.

Therefore, the Applicants respectfully submit that the instant application as filed provides a clear description of orphan GPCRs that have been associated with a disease.

In view of the description of exemplary orphan GPCRs associated with diseases in the subject specification, the Applicants respectfully submit that the written description requirement is fully satisfied, and as such request withdrawal of this rejection.

The Applicants finally note that withdrawal of this rejection would be consistent with recent decisions by the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office, such as *Ex parte Bandman* BPAI Appeal No. 2004-2319 (2004) and *Ex parte Sun* BPAI Appeal No. 2003-1993 (2003), among others. The genus claims that are the subject of these decisions were supported by disclosure of a *single* representative species encompassed by the claims. The instant

application provides both a general description as well as specific examples of orphan GPCRs that are encompassed by the claimed invention. As such, the Applicants submit that the instant application at a minimum meets the criteria set forth in the above-referenced BPAI decisions.

REJECTIONS UNDER §112, ¶2

Claims 63-70 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner notes that dependent Claims 63 to 66 include the claim term "said mammalian tissue source" which lacks antecedent basis in their respective parent claim.

In response, the Applicants have amended Claims 69 and 70 to read "...disease or disorder in a mammal..." and amended Claims 63 to 66 to replace the term "mammalian tissue source" with either "said mammal is a human" (Claims 64 and 64) or "said mammal is a non-human mammal".

The Examiner notes that dependent Claims 67 and 68 include the claims term "said physiological function" which lacks antecedent basis in their respective parent claim.

In response, the Applicants have canceled Claims 67 and 68, thus rendering this rejection moot.

In view of the amendments and cancellation of claims described above, the Applicants respectfully request the withdrawal of this rejection.

CONCLUSION

Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-0815, order numberAREN-001CIP.

Respectfully submitted,
BOZICEVIC, FIELD & FRANCIS LLP

Date: 4-2-07

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